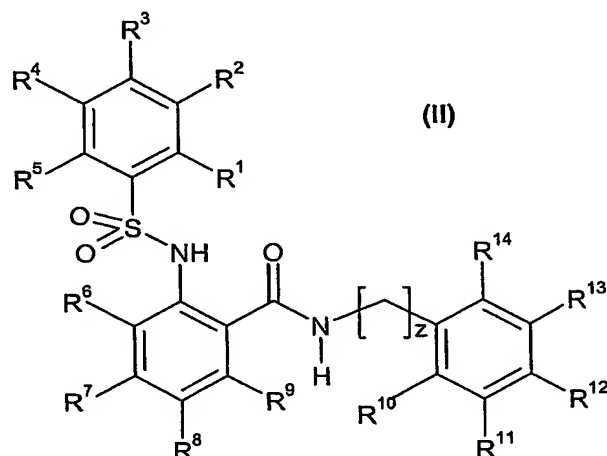


Claims

1) An imaging agent which comprises a synthetic MSRA antagonist labelled with an imaging moiety, wherein the synthetic MSRA antagonist is a sulphonamidobenzamide compound, and wherein the imaging moiety can be detected externally in a non-invasive manner following administration of said labelled synthetic MSRA antagonist to the mammalian body *in vivo*.

2) The imaging agent of claim 1 wherein the sulphonamidobenzamide compound is of Formula (II):



wherein;

z is 0, 1 or 2;

R^1 - R^{14} are independently R groups, where R is;

hydrogen, hydroxy, carboxy, C_{1-6} alkyl, nitro, cyano, amino, halogen, C_{6-14} aryl, C_{2-7} alkenyl, C_{2-7} alkynyl, C_{1-6} acyl, C_{7-15} aroyl, C_{2-7} carboalkoxy, C_{2-15} carbamoyl, C_{2-15} carbamyl, C_{1-6} alkylsulphinyl, C_{6-14} arylsulphinyl, C_{6-12} arylalkylsulphinyl, C_{1-6} alkylsulphonyl, C_{6-14} arylsulphonyl, C_{6-12} arylalkylsulphonyl, sulphonyl, C_{6-14} arylsulphonamido or C_{1-6} alkylsulphonamido.

3) The imaging agent of claim 2 wherein each R^1 to R^{14} is chosen from:

an imaging moiety, hydrogen, C₁₋₆ alkyl, hydroxy, carboxy, amino or halogen.

- 4) The imaging agent of claims 2 and 3 wherein one of R², R³, R⁷, R⁸ and R¹² in
5 Formula (II) is an imaging moiety, and the remaining R², R³, R⁷, R⁸ and R¹² groups
are independently selected from hydrogen, C₁₋₆ alkyl, carboxy, or a halogen selected
from chlorine, bromine, fluorine or iodine.
- 5) The imaging agent of claims 2-4 wherein R³, R⁸ and R¹² are each independently a
10 halogen selected from chlorine, bromine, fluorine or iodine.
- 6) The imaging agent of claims 1-5 wherein said imaging moiety is selected from:
- (i) a radioactive metal ion;
 - (ii) a paramagnetic metal ion;
 - 15 (iii) a gamma-emitting radioactive halogen;
 - (iv) a positron-emitting radioactive non-metal;
 - (v) a hyperpolarised NMR-active nucleus;
 - (vi) a reporter suitable for *in vivo* optical imaging;
 - (vii) a β -emitter suitable for intravascular detection.
- 20
- 7) The imaging agent of claim 6, wherein the radioactive metal ion is a gamma emitter
or a positron emitter.
- 8) The imaging agent of claim 7, wherein the radioactive metal ion is selected from
25 ^{99m}Tc, ^{94m}Tc, ¹¹¹In, ^{113m}In, ⁶⁴Cu, ⁶⁷Cu, ⁶⁷Ga, ⁶⁸Ga, ⁴⁸V, ⁵²Fe and ⁵⁵Co.
- 9) The imaging agent of claim 6, wherein the paramagnetic metal ion is selected from
paramagnetic ions of Gd, Mn and Fe.
- 30 10) The imaging agent of claim 7, wherein the paramagnetic metal ion is Gd(III).

11)The imaging agent of claim 6, wherein the gamma-emitting radioactive halogen is a radioactive isotope of iodine.

12)The imaging agent of claim 11, wherein the radioactive isotope of iodine is chosen from ^{123}I or ^{131}I .

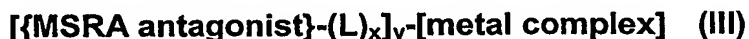
13)The imaging agent of claim 6, wherein the positron-emitting radioactive non-metal is selected from ^{11}C , ^{13}N , ^{15}O , ^{17}F , ^{18}F , ^{124}I , ^{75}Br and ^{76}Br .

14)The imaging agent of claim 13, wherein the positron-emitting radioactive non-metal is ^{18}F .

15)The imaging agent of claim 6 wherein the hyperpolarised NMR-active nucleus is selected from ^{13}C , ^{15}N , ^{19}F , ^{29}Si and ^{31}P .

16)The imaging agent of claim 15 wherein the hyperpolarized NMR-active nucleus is ^{13}C .

17)The imaging agent of claims 6-10, wherein the imaging moiety is a radioactive or a paramagnetic metal ion and the metal ion is attached to the MSRA antagonist as part of a metal complex to form a conjugate of Formula (III):



wherein:

$-(\text{L})_x-$ is a linker group wherein each L is independently $-\text{CZ}_2-$, $-\text{CZ}=\text{CZ}-$, $-\text{C}\equiv\text{C}-$, $-\text{CZ}_2\text{CO}_2-$, $-\text{CO}_2\text{CZ}_2-$, $-\text{NZCO}-$, $-\text{CONZ}-$, $-\text{NZ}(\text{C}=\text{O})\text{NZ}-$, $-\text{NZ}(\text{C}=\text{S})\text{NZ}-$, $-\text{SO}_2\text{NZ}-$, $-\text{NZSO}_2-$, $-\text{CZ}_2\text{OCZ}_2-$, $-\text{CZ}_2\text{SCZ}_2-$, $-\text{CZ}_2\text{NZCZ}_2-$, a C_{4-8} cycloheteroalkylene group, a C_{4-8} cycloalkylene group, a C_{5-12} arylene group, a C_{3-12} heteroarylene group, an amino acid or a monodisperse polyethyleneglycol (PEG) building block;

Z is independently chosen from H, C₁₋₄ alkyl, C₂₋₄ alkenyl, C₂₋₄ alkynyl, C₁₋₄ alkoxyalkyl or C₁₋₄ hydroxyalkyl;

x is an integer of value 0 to 10; and

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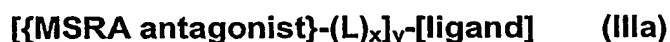
y is 1, 2 or 3.

18)The imaging agent of claim 17 wherein the metal complex is a coordination complex of the radioactive metal ion or the paramagnetic metal ion with one or more ligands.

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19)The imaging agent of claim 18 wherein said one or more ligands are chelating agents selected from diaminedioximes, N₃S ligands, N₂S₂ ligands, N₄ ligands and N₂O₂ ligands.

15 20)An imaging agent precursor of Formula (IIIa):



wherein:

20 (L)_x is a linker group wherein L is as defined in claim 17;

x is an integer of value 0 to 10; and

y is 1, 2 or 3.

21)A pharmaceutical composition comprising the imaging agent of claims 1-19 together with a biocompatible carrier, in a form suitable for mammalian administration.

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22)The pharmaceutical composition of claim 21 for use in the diagnostic imaging of cardiovascular disease.

23)The pharmaceutical composition of claims 21 and 22 for use in the diagnostic imaging of atherosclerotic plaques, coronary artery disease, thrombosis, transient ischaemia or renal disease.

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24)The pharmaceutical composition of claim 23 for use in the diagnostic imaging of atherosclerotic plaques.

5 25)The pharmaceutical composition of claim 24 for use in the diagnostic imaging of unstable atherosclerotic plaques.

26)A kit for the preparation of the pharmaceutical composition of any of claims 21-27 comprising a precursor of the imaging agent of any of claims 1-19.

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27)The kit of claim 26 wherein said precursor is of Formula (IIIa) of claim 20.

28)The kit of claim 27 wherein the preparation of said pharmaceutical composition comprises reaction of a radioactive metal ion or a paramagnetic metal ion with the precursor of Formula (IIIa).

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29)The kit of claim 28 wherein the radioactive metal ion is selected from ^{99m}Tc , ^{111}In , ^{64}Cu , ^{67}Cu , ^{67}Ga and ^{68}Ga .

20 30)The kit of claims 28 and 29 wherein the radioactive metal ion is ^{99m}Tc .

31)The kit of claim 28 wherein the paramagnetic metal ion is selected from Gd, Mn and Fe.

25 32)The kit of claim 31 wherein the paramagnetic metal ion is Gd(III).

33)Use of the imaging agent of claims 1-20 for the diagnostic imaging of cardiovascular disease.

30 34)The use of claim 33 wherein the cardiovascular disease is atherosclerosis.